CHAPTER 9

Assessment of Military-Related Posttraumatic Stress Disorder

TERENCE M. KEANE
ELANA NEWMAN
SUSAN M. ORSILLO

INTRODUCTION

Objective measurement of the psychological effects of combat and other military stressors has grown rapidly since the introduction of the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III; American Psychiatric Association, 1980). Studies by Wilson (1979) and Egendorf, Kadushin, Laufer, Rothbart, and Sloan (1981) were among the first attempts to quantify the psychological effects of war as these investigators systematically examined American veterans from Vietnam. Early work by Grinker and Spiegel (1945), Gillespie, (1942), and Kardiner (1941) provided the clear precedent for measurement of the effects of war with veterans from other eras; however, it was 30 years or more before the current classification scheme was developed and conceptual models of the direct effects of overwhelming stressors gained widespread acceptance.

Over the past 15 years, growth in the quantity and quality of instruments to assess posttraumatic stress disorder (PTSD) and traumatic stress exposure can be characterized as exceptional. Initially driven by the demand for instruments to be used in clinic settings, this development has been maintained by studies funded in the public interest to estimate the prevalence of exposure to traumatic events and the development of PTSD in our society. With the recognition that many different types of traumatic experiences lead to PTSD, clinicians and researchers developed many instruments that tend to measure PTSD specifically as it pertains to these diverse life experiences.

This fact alone accounts for much of the proliferation of assessment instruments in the field.

One purpose of this chapter is to review the extant literature on the development and evaluation of instruments that measure combat and war-zone stressor exposure and attendant PTSD. A second purpose of this chapter is to present a method for the assessment of PTSD initially developed in our clinical–research program in Jackson, Mississippi (Keane, Fairbank, Caddell, Zimering, & Bender, 1985), and refined and enhanced in the National Center for PTSD–Boston. This method is premised upon the notion that all measures of a disorder are imperfectly related to the condition, and that multiple measures from different domains improve diagnostic accuracy and confidence. This multimethod approach to assessment of PTSD is valuable clinically, because it taps numerous domains of functioning and thus assists the clinician in identifying numerous targets for intervention. It is valuable in research because it increases the likelihood that patients classified as PTSD for research purposes are indeed PTSD.

A third purpose of this chapter is to recognize the changing nature of military activities in the post–Cold War era. As peacekeeping functions and humanitarian efforts increasingly become functions of military troops, they offer unique stressor experiences to which members of the military are exposed. Efforts to quantify these experiences require a specific methodology that will permit the stable measurement of the complex life events for those people who serve in these roles. We offer one possible methodology for clinicians and researchers to employ when confronted with measuring stressor exposure in a unique environment and setting.

Finally, military forces in the United States are becoming increasingly diverse. Racial and ethnic composition of the American military force is changing, and with more minorities involved in military actions, assessment measures must be developed that are culturally sensitive and broadly based to permit accurate evaluations and comparisons across minority groups. Similarly, women are represented in the military in greater numbers than they were historically, and their range of responsibilities and experiences has greatly expanded. Assessment instruments that are, at once, sensitive to different gender-based experiences in military assignments and also representative of women's unique responses to military stressors demand special consideration. The final purpose of this chapter is to focus upon strategies that will assist professionals in the successful development of instruments that meet these criteria.

MULTIMODAL ASSESSMENT

A comprehensive assessment of military-related PTSD requires a thorough evaluation of PTSD symptoms and stressors within a broad-based evaluation of general psychopathology (Keane, Wolfe, & Taylor, 1987). Typi-

cal parameters for assessment include the individual's level of functioning within developmental, social, familial, educational, vocational, medical, cognitive, interpersonal, behavioral, and emotional domains across the time periods prior to, during, and subsequent to military service. Such an approach provides an adequate foundation upon which to create accurate diagnostic and case formulations that account for the degree to which any pre- or post-war-zone experiences may contribute to the individual's current level of functioning.

Comprehensive PTSD assessment is best achieved through the use of multiple reliable and valid instruments, since every measure is associated with some degree of error (Keane et al., 1987). Therefore a multimethod approach, combining data derived from self-report measures, structured clinical interviews, and, when possible, psychophysiological assessment is recommended. Such multimodal assessment of PTSD combines each measure's relative strengths, minimizes the psychometric shortcomings of any one instrument, and maximizes correct diagnostic decisions. (See Weathers, Keane, King, & King, Chapter 4, this volume, for detailed information on psychometric theory and terms.)

In addition, the external validity of PTSD assessment can be enhanced by collecting information from multiple informants and available archives. Some individuals with PTSD may have difficulty specifying their symptoms, behaviors, and experiences due to denial, amnesia, avoidance, minimization, cognitive impairment, and/or motivational factors. Therefore, collateral reports from friends, neighbors, partners, family members, or health care providers can provide meaningful information to corroborate and clarify aspects of the individual's experiences. Any consistent patterns of discordance between informants can yield hypotheses about the individual's characteristic attributional style and/or the interpersonal consequences of the individual's behaviors. Similarly, consultation of all relevant archives (e.g., medical, legal, military, and educational records) may provide corroborative data to support and amplify self-reports.

Although comprehensive assessments require measures and methods that assess more than military-related experiences and distress, a review of all potential measures that could be used in multidimensional assessment is beyond the scope of this chapter. Our review will focus upon the most commonly used validated methods and measurement strategies applied specifically to the assessment of military-related PTSD, including measures of exposure, clinical interviews, self-report measures, and psychophysiological assessment. Given the chapter's emphasis on military-related PTSD, considerable weight will be placed on the assessment of exposure to potentially traumatic experiences that occur in the context of military duties. Several unpublished measures and not yet validated measures are included in this review if they have noteworthy features or historical relevance. Unless otherwise indicated, all data are derived from samples of U.S. male military personnel and based on DSM-III-R criteria for PTSD (American Psychiatric Association, 1987).

Evaluation of Exposure to Military-Related, Potentially Traumatic Events

Deployment in a war zone, combat duty or otherwise, does not in and of itself indicate that an individual has experienced a potentially traumatic event (PTE). In order to assess whether an individual was exposed to a PTE during a tour of duty, detailed descriptions of military duties and experiences must be obtained. Although examination of military records can be a helpful adjunct to this assessment, overreliance on these records is ill-advised, since there are often inaccuracies in these documents (e.g., Watson, Juba, & Anderson, 1989).

Although the assessment of military-related PTSD is well advanced scientifically, the assessment of stressor exposure in military and war settings is less well developed. For example, few measures of war-zone stressor exposure have undergone empirical validation, and only one study has compared the relative performance of the multiple combat exposure scales available (Watson et al., 1989). The following brief review identifies the four major conceptual approaches to measuring exposure to war-zone-related PTEs and describes the most popular validated measures within each of these domains. Table 9.1 provides a summary of the number of items, content areas covered, known internal consistency, and available convergence validity with PTSD and/or external corroboration (medals or assigned duty).

Many measures of combat-related PTSD exclusively focus upon detailing the intensity, frequency, and duration of traditional combat experiences involving threat of danger, loss of life, or severe physical injury (Green, 1993). Such exposure has been documented to be a risk factor for PTSD among Vietnam veterans (e.g., Kulka et al., 1990). Although many exposure scales have been developed, few have been empirically cross-validated, and the majority were derived based on experiences of Vietnam veterans. The two most widely used scales that focus exclusively on combat experiences are the 5-item Vietnam Veterans Combat Exposure Scale (Figley & Stretch, 1980) and the 7-item Combat Exposure Scale (Keane et al., 1989).

A second domain of military exposure that is related to PTSD symptoms includes those war-zone experiences outside the realm of traditional combat (e.g., Grady, Woolfolk, & Budney, 1989; Green, Grace, Lindy, & Gleser, 1990a; Yehuda, Southwick, & Giller, 1992). For example, in the context of combat-related activities, many Vietnam War veterans were confronted with guerrilla warfare that included exposure to grotesque death and mutilation, and many forms of abusive violence (e.g., Laufer, Gallops, & Frey-Wouters, 1984). Both the 6-item Military Stress Scale (Watson, Kucala, Manifold, Vassar, & Juba, 1988) and the 7-item Combat Exposure Index (Janes, Goldberg, Eisen, & True, 1991) include an assessment of exposure to such experiences. The 7-item Combat Exposure Scale (Lund, Foy, Sipprelle, & Strachan, 1984) and 10-item Combat Scale—Revised (Gallops, Laufer, & Yager, 1981) include one general item assessing "killing of civilians" that might potentially detect

some forms of exposure to abusive violence. In addition, there are several psychometrically validated scales available that focus solely on the assessment of exposure to atrocities, such as the 6-item Atrocity Scale (Brett & Lauffer, unpublished cited in Yehuda et al., 1992) and the 5-item Abusive Violence Scale (Hendrix & Schumm, 1990). The 4-item Objective Military Stress Scale (Solomon, Mikulincer, & Hobfoll, 1987), developed for Israeli soldiers during the Lebanon War, has one question regarding evacuation of dead soldiers. A 24-item Graves Registration Duty Scale, developed to assess aspects of handling human remains (e.g., matching or identifying body parts, transporting body parts), was recently validated on a primarily male sample of Persian Gulf Era troop members (Sutker, Uddo, Brailey, Vasterling, & Errera, 1994).

A third approach to assessing war-zone-related exposure to PTEs includes evaluating the many, generally unpleasant parameters of the military experience (e.g., bad environmental conditions; lack of military support; sleep, food, and water deprivation; harassment upon homecoming). Enduring such adversity was found to be a significant predictor of PTSD among both male and female Vietnam veterans (King, King, Gudanowski, & Vreven, 1995a). Wilson and Krause (1980) designed a 46-item "Specific Stressor In Vietnam" subscale in the Vietnam Era Stress Inventory (VESI) that included many items regarding exposure to ongoing harsh daily circumstances (Wilson & Krause, 1989). Despite the breadth and clinical acumen reflected in this scale, only three studies have examined its psychometric properties, and each was based on a modification of the measure (Green et al., 1990a; McFall, Smith, Mackay, & Tarver, 1990a; McFall, Smith, Roszell, Tarver, & Malais, 1990b; Wilson & Prabucki, 1989).

In the 100-item National Vietnam Veterans Readjustment Study (NVVRS) stressor measure (Kulka et al., 1990), several items assessed malevolent conditions related to deprivation and feeling removed from the world, in addition to combat, grotesque death, and abusive violence (Schlenger et al., 1992). Accordingly, a 72-item measure of combat exposure for both men and women was derived from the NVVRS stressor items that assessed perceived threat and malevolent environment in addition to traditional combat and exposure to atrocities (King et al., 1995a). Given that the environment in a war-zone differs substantially for males and females, Wolfe, Brown, Furey and Levin (1993a) developed the Wartime Stressor Scale for Women to assess the social and environmental context for women soldiers, including, for instance, questions about sexual discrimination as well as sexual assault.

The final approach to assessing exposure to military-related PTEs includes assessing the individual's emotional appraisal of events. Criterion A of the DSM-IV PTSD diagnosis (American Psychiatric Association, 1994) specifies that a traumatic event must involve actual or threatened injury to oneself or others (Criterion A1) and engender concomitant feelings of fear, helplessness, or horror (Criterion A2). Since the inclusion of Criterion A2 is a recent addition to the diagnostic nomenclature, none of the previously

TABLE 9.1. Self-Report Measures of Exposure to War-Zone-Related Trauma

Authors	Scale name	Items	Alpha	Relationship to measures of PTSD	Relationship to medals or specified duty	Handling bodies	Abusive violence items	Malevolent environment items
Keane et al. (1989)	Combat Exposure Scale	7	.85	.43 Mississippi Scale	—	0	0	0
Figley & Stretch (1981)	Vietnam Veterans Questionnaire Combat Exposure Scale	5	.93	+ but unspecified (Woolfolk & Grady, 1988)	Medals: r = .42* Duty: r = .40*	0	0	0
Watson et al. (1988)	Military Stress Scale	6	—	.57 PTSD Interview	Medals: r = .29, ns Duty: r = .40**	0	1	0
Janes et al. (1991)	Combat Exposure Index	7	.84	—	***chi-squares for each type of medal noted	1	0	0
Lund et al. (1984); Foy et al. (1984)[a]	Combat Exposure Scale	7	CR = .93	.31 symptom intensity in a nonvalidated PTSD scale; Kendall's tau C	Medals: r = .20, ns duty: r = .19, ns (43) = .64**** for PTSD	0	1 possible item	0
Gallops, Laufer, & Yager (1981)	Combat Scale—Revised[b]	10	.84	—	Medals: r = .42** Duty: r = .40**	0	1 possible	0
Solomon et al. (1987)	Objective Military Stress Scale	4	—	—	Medals: r = .41* Duty: r = .25, ns	1	0	0
Brett & Laufer (unpublished)	Atrocity Scale	6		.70 Mississippi Scale, .39 Figley PTSD scale		—	6	—
Hendrix & Schumm	Abusive Violence	5	.81	.28* IES intrusion scale .30 IES avoidance scale	—	—	5	—

				for PTSD				
Gallops, Laufer, & Yager (1981)	Combat Scale—Revised[b]	10	.84	—	Medals: r = .42** Duty: r = .40**	0	1 possible	0
Solomon et al. (1987)	Objective Military Stress Scale	4	—	—	Medals: r = .41* Duty: r = .25, ns	1	0	0
Brett & Laufer (unpublished)	Atrocity Scale	6		.70 Mississippi Scale, .39 Figley PTSD scale		—	6	—
Hendrix & Schumm (1990)	Abusive Violence Scale	5	.81	.28* IES intrusion scale .30 IES avoidance scale	—	—	5	—
Sutker et al. (1994)	Graves Registration Duty Scale	24	.88	.27* (number of SCID Criterion B symptoms)	—	24	—	—
Wilson & Krauss (1980)	VESI Stressor Scale	46	.87–.95 (Green et al., 1990a) .94 (McFall et al., 1990b)	Combat .23–.57*** (symptom clusters) Environment .25–.47* (symptom clusters)		1	5	19
Schlenger et al. (1992)	Exposure to War Zone NSVG	100	.74–.94 (median = .87)	18.4% higher rate among high vs. low exposed men; 13.2 for women	70% of men who received purple hearts reported high exposure	—	24—men, 10—women	12—men, 10—women
King et al. (1995)	War Zone Stress Index	72	.83–.94	—	—	0	9	18
Wolfe et al. (1993)	Wartime Stressor Scale for Women	27	.89	0.35 PK***, 0.43 Mississippi Scale***	—	1	0	9

Note. The Solomon scale is based on experiences of Israeli soldiers in the Lebanon War. All other scales are used on Vietnam veterans. Wolfe et al., King et al., and Schlenger et al. have female Vietnam veterans in their sample. — not available; CR, coefficient of reproducibility (reliability measure for a Guttman scale).

[a]This scale is often cited either way.

[b]The original scale was created in 1981 by Egendorf, Boulanger, Kadushin, Laufer, Sloan, and Smith as part of the study conducted by Egendorf, Kadushin, Laufer, Rothbart, and Sloan (1981). The scale is often referenced in three ways.

*p < .05; **p < .01; ***p < .001; ****p < .0001.

validated self-report measures includes assessment of all three specified emotional response domains. King et al. (1995a) derived a scale from items used in the NVVRS, which assessed an individual's appraisal of life threat, that can provide information about the respondent's level of fear. Two recently developed but nonvalidated exposure measures, the Potential Stressful Events Interview (Falsetti, Resnick, Kilpatrick, & Freedy, 1994), and the Evaluation of Lifetime Stressors (Krinsley et al., 1994) do have features that assess fear, horror, and helplessness. Both these measures, which include extensive structured interviews, assess lifetime exposure to all potentially traumatic events, including military-related experiences.

Evaluation of PTSD Symptoms among Military Personnel

Structured Clinical Interviews

Several structured interviews are available that have been developed for the assessment of PTSD as modules of comprehensive diagnostic assessment tools or as independent PTSD measures. Modules offer expediency in diagnosis but have typically yielded only dichotomous symptom ratings. Interviews focused solely on PTSD diagnostic criteria often require more time investment, but many yield evaluation of symptoms on a continuum. We will briefly present examples of each type of interview format that can be used to diagnose PTSD among military personnel. Notably, these interviews are all based on DSM-III-R criteria, and await updating to DSM-IV standards.

PTSD modules are available in the Diagnostic Interview Schedule (DIS; Robins, Helzer, Croughan, & Ratcliff, 1981a; Robins, Helzer, Croughan, Williams, & Spitzer, 1981b), the Structured Clinical Interview for DSM-III-R (SCID; Spitzer, Williams, Gibbon, & First, 1990), and the Anxiety Disorders Interview Schedule—Revised (ADIS-R; Blanchard, Gerardi, Kolb, & Barlow, 1986; DiNardo & Barlow, 1988). Of all these measures, the SCID has demonstrated high interrater reliability and is strongly correlated with other measures of PTSD. Although useful in clinical populations, questions about the diagnostic sensitivity of the DIS PTSD module, particularly in community samples (e.g., Keane & Penk, 1988; Kulka et al., 1990), suggest a need for additional psychometric evaluation in field studies.

PTSD structured interviews that have been used with veterans include the Clinician-Administered PTSD Scale (CAPS; Blake et al., 1990; Weathers & Litz, 1994), the PTSD Interview (PTSD-I; Watson, Juba, Manifold, Kucala, & Anderson, 1991), and the Structured Interview for PTSD (SI-PTSD; Davidson, Smith, & Kudler, 1989). Although all these measures performed well, the CAPS is extremely noteworthy; its strengths include good psychometrics (e.g., α coefficient = .94; sensitivity = .84; specificity = .95; κ coefficient = .78), clear behavioral anchors, a time frame concordant with that of DSM diagnostic criteria, and separate frequency and intensity ratings.

Self-Report Measures

Self-report checklists that provide information about PTSD symptomatology can be time- and cost-efficient tools in the multimethod assessment process. They can be combined to maximize efficiency, specificity, or sensitivity of the assessment battery. Many excellent self-report questionnaires are available to assess military-related PTSD; some solely assess diagnostic criteria, some correspond to the diagnostic criteria and their associated features, and other measures broadly sample the content of the disorder. We briefly review the measures that are commonly used in assessments of military personnel.

Several short scales have been developed that assess the 17 diagnostic symptoms of PTSD. Not surprisingly, they all have relatively comparable psychometric qualities, particularly internal consistency. The PTSD Checklist (PCL; Weathers, Litz, Herman, Huska, & Keane, 1993), available in both DSM-III-R and DSM-IV versions, has good sensitivity (.82) and specificity (.83), and is positively correlated with standard measures of PTSD (Mississippi Scale, r = .93; MMPI-2-PK Scale, r = .77; Impact of Event Scale, r = .90). The PTSD Inventory, used with Israeli soldiers deployed in the Lebanon War (I-PTSD; Solomon, 1993) and during the Yom Kippur War (Solomon et al., 1993), was originally validated using DSM-III criteria and has been updated to reflect DSM-III-R criteria. The current version has excellent internal consistency (Cronbach's α coefficient = .86), excellent specificity (.94 for both current and past PTSD), but weak sensitivity (current PTSD = .48, past PTSD = .48). The Purdue Post-Traumatic Stress Scale (Hendrix, Anelli, Gibbs, & Fournier, 1994) and the PTSD scale by Friedman and colleagues (Friedman, Schneiderman, West, & Corson, 1986) both demonstrate good psychometric properties, but are limited in their current applicability, since both are based on DSM-III criteria.

Several validated self-report instruments exist that include PTSD symptoms and diagnosis, and commonly associated features of the disorder. The Self-Rating Inventory for PTSD (SIP; Hovens et al., 1993; Hovens et al., 1994) consists of 47 items designed for use with Dutch World War II resistance fighters and is available in both English and Dutch. The SIP includes trauma-related symptoms such as those classified under the proposed Diagnosis of Extreme Stress Not Otherwise Specified classification (Herman, 1993). Relative to the CAPS, the SIP-PTSD subscale demonstrates excellent sensitivity (.92) and moderate specificity (.61) within a sample of civilian psychiatric outpatients and Dutch resistance fighters. The 43-item Los Angeles Symptom Checklist (LASC; King, King, Leskin, & Foy, 1995b) also appears to be a psychometrically sound measure of PTSD symptoms among Vietnam veterans (α coefficient = .91 for 17-item index and .94 for full index; test–retest reliability = .94 for the 17-item index and .90 for full index), although specificity and sensitivity data from military samples are still needed.

There are several measures that perform quite well in predicting PTSD diagnostic status that are not based directly on DSM diagnostic criteria. In

fact, two of the primary self-report measures in the NVVRS, the Keane PTSD Scale of the MMPI (PK scale; Keane, Malloy, & Fairbank, 1984) and the Mississippi Scale for Combat-Related PTSD (Keane, Caddell, & Taylor, 1988) were designed to measure broadly the construct of PTSD. The 49-item MMPI-PK scale and the 46-item MMPI-2 PK have moderate or better psychometric performance, although the sensitivity and specificity of the PK scales have varied from study to study (e.g., Graham, 1993; Keane et al., 1984; Lyons & Keane, 1992; Query, Megran, & McDonald, 1986; Watson, 1990). In studies in which the diagnostic criterion is strongest (e.g., SCID or CAPS), the PK's performance is very good. When more questionable diagnostic criteria are employed (e.g., chart diagnosis), the PK has had more modest success. In addition, the MMPI-2-PK-scale has been shown to work as well when it is applied as a separate measure as it does when embedded within the full MMPI (Graham, 1993; Herman, Weathers, Litz, & Keane, in press; Litz et al., 1991; Lyons & Scotti, 1994).

The 35-item Mississippi Scale for Combat-Related PTSD (Keane et al., 1988), is one of the most widely used PTSD measures among veteran populations (e.g., Kulka et al., 1990; McFall et al., 1990a; Perconte et al., 1993), and is available in numerous languages (e.g., Dutch, Spanish). Three abbreviated versions of the scale also show promising correlations (.90–.96) with the original scale (Fontana & Rosenheck, 1994; Hyer, Davis, Boudewyns, & Woods, 1991; Wolfe, Keane, Kaloupek, Mora, & Wine, 1993c).

The 15-item Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979; Zilberg, Weiss, & Horowitz, 1982), also used in the NVVRS preliminary validation trial (Kulka et al., 1991), was found to have less useful diagnostic utility than either the PK or Mississippi Scale, but nonetheless performed as a good indicator of PTSD status (sensitivity = .92; specificity = .62; correct classification = 81.6%). The IES has been translated widely and used with many different national military forces (e.g., Kulka et al., 1990; Schwarzwald, Solomon, Weisenberg, & Mikulincer, 1987).

More recently, two other promising scales were developed that broadly cover the domain of traumatic symptomatology. The 26-item Penn Inventory for Posttraumatic Stress (Hammarberg, 1992) contains questions that apply to all trauma types, making it useful for comparing military and civilian samples. It has similar sensitivity (.90), specificity (1.00), and overall efficiency (.94) to the Mississippi Scale.

Weathers and his colleagues (Weathers et al., 1996) derived a 25-item War-Zone-Related PTSD subscale (WZ-PTSD) that is embedded in the Symptom Checklist 90—Revised (SCL-90-R; Derogatis, 1977). In two different samples, this scale has demonstrated that the WZ-PTSD measure clearly outperforms the SCL-90-R Global Severity Index in identifying cases of PTSD.

Psychophysiological Assessment

Psychophysiological assessment can provide unique information on the extent of autonomic hyperarousal and exaggerated startle response in PTSD

that is not solely reliant on self-report. In general, combat veterans with PTSD demonstrate significantly more psychophysiological reactivity to combat stimuli than such comparison groups as nonveterans with psychiatric disorders and combat veterans without psychiatric disorders (Prins, Kaloupek, & Keane, 1995), although the specificity of psychophysiological assessment exceeds its sensitivity. A psychophysiological assessment of PTSD usually involves presenting an individual with standardized stimuli (e.g., combat photos, noises, odors) or personalized cues (e.g., taped scripts of their traumatic experiences) of PTEs. Measurements are taken of one or more physiological indices, subjective appraisal (e.g., arousal and distress), and behavior (e.g., visible startle, crying, averting gaze). Psychophysiological indices that can be assessed include heart rate, blood pressure, muscle tension, skin conductance level and response, and peripheral temperature (e.g., Blanchard, Kolb, Pallmeyer, & Gerardi, 1982; Orr et al., 1990; Pitman, Orr, Forgue, de Jong, & Claiborn, 1987; Shalev, Orr, & Pitman, 1992, 1993). Again, since no one psychophysiological index is error free, convergent measures of psychophysiology are recommended. Although psychophysiological assessment once required elaborate and expensive laboratory equipment, portable systems have made this technique more feasible than ever before. Orr and Kaloupek (Chapter 3, this volume) provide a more thorough discussion of the findings from studies of the psychophysiological assessment of PTSD.

Interpretation of the Components of Multimodal Assessment

The ideal battery for the assessment of war-zone-related PTSD incorporates data derived from the multiple methods described earlier. However, inconsistency across these diverse domains is common in multimodal and multidimensional assessment and may result from either measurement artifacts or as manifestations of a varying presentation of the disorder. Distinguishing noise from signal among these multiple measures is a complex task that relies upon expertise in both clinical and empirical domains. Despite the wealth of psychometric data available regarding the performance of individual instruments, few studies are available that examine the relative contributions of particular instruments within a battery to the overall prediction of PTSD status. Two distinct strategies have evolved over time. In the NVVRS, a statistical algorithm was designed to approximate the process of clinical decision making and was used to reconcile cases in which disagreements occurred among various PTSD indicators (Kulka et al., 1991; Schlenger et al., 1992). This approach may be most useful in case determination for research and may provide data to inform clinical practice. Nonetheless, clinical judgment and expertise is also needed to interpret the qualitative contributions of particular measures and the manner in which individuals may minimize or distort their experiences. Thus, a fundamental general approach to interpretation incorporates a combination of good clinical skill and empirical knowledge about the relative psychometric qualities of each indicator. To facilitate the interpretation of multimodal data, Keane and his colleagues

(1987) suggested the use of consensus among clinical team members who represent expertise in different arenas. This approach ensures that all data are considered, that bias is minimized, and that empirical and psychometric concerns are appropriately evaluated so that the most accurate interpretation of the data can be attained.

NEW CHALLENGES TO MEASURING MILITARY-RELATED PTSD

New Issues in the Multidimensional Assessment of Exposure to Military-Related PTEs

With the end of the Cold War, the types of missions in which military personnel will participate will be markedly different from the conflicts of the past. As part of the construction of the new world order, it is likely that the U.S. armed forces, as well as multinational forces, will primarily engage in multilateral peacekeeping, humanitarian relief, and peace enforcement operations with the goal of confronting regional instabilities that threaten world interests (Henshaw, 1993). In an illustrative review, Moskos and Burk (1994) presented a sampling of the types of missions Western military forces have undertaken just since the end of the Gulf War in March 1991. Examples of such missions include: "Operation Provide Comfort" in Kurdistan, the goal of which was to supply relief to refugees; "Operation Sea Angel" in Bangladesh, where forces provided relief to victims of a flood; California "Joint Task Force Los Angeles," a domestic operation in which U.S. forces were called upon to restore order following riots; and "Operation Restore Hope," the purpose of which was to provide humanitarian aid and peacekeeping in Somalia. Although these operations differ in terms of the types of duties that military personnel were called upon to assume, they share a common theme of military "humanitarianism."

Preliminary data on the psychological adjustment of participants in the peace-enforcement mission in Somalia suggest that PTSD can develop as a result of the military-related stressors involved with this type of duty (Orsillo et al., 1994a). Although existing measures of military-related PTSD will most likely be appropriate for assessing symptom presentation, novel approaches to measuring exposure to PTEs must be developed to reflect the unique stressors that characterize these types of missions. There are many factors suggesting that as the issues surrounding military missions change, so too does the direction mental health professionals need to take in assessing exposure to PTEs.

For instance, one challenge inherent in the assessment of exposure to military-related PTEs among personnel engaged in these new military operations is the diversity in the nature and character of the missions. Although the vast majority of interventions can be described as peacekeeping or peacemaking operations, the actual role of participants in these experiences may

vary widely. On the one extreme are conventional observer missions, in which forces serve as impartial observers of a truce between two or more formerly warring parties (Henshaw, 1993). In this situation, the goal of the mission is usually short term and quite clear, and the presence of the troops is supported by all parties. However, peace operations can range in level of intervention to include missions that require a variety of activities that could potentially result in more direct exposure to PTEs, including the delivery of humanitarian assistance to poverty-stricken, starving people; disarmament of or preventive peacekeeping between potentially hostile forces; and activities involving conventional military capabilities, such as in the Gulf War (Eyre, Segal, & Segal, 1993; Henshaw, 1993).

A second task that evaluators may face in measuring exposure to PTEs during new military interventions is developing assessment instruments that account for the changing nature of the mission. For instance, the nature of the U.S. mission in Somalia changed after May 1993 from a humanitarian to a more traditional combat intervention (Michaelson, 1993). Data from over 3,000 active-duty personnel who served in Somalia, half of whom left Somalia before May 1993 and half of whom left after June, confirm significant differences between the groups regarding their exposure to high- and low-magnitude stressors (Orsillo et al., 1994b).

As we mentioned earlier, a multidimensional approach to the measurement of military-stressor exposure includes assessment of the general malevolency of the environment and individuals' subjective emotional response to traumatic events, in addition to an assessment of their participation in the types of military activities described earlier. Findings from a preliminary survey of individuals serving in Somalia support the notion that these separate components of exposure are independently associated with the development of PTSD among peace-enforcement participants (Orsillo et al., 1994a). Thus, it is important to consider these dimensions in the measurement of exposure within the new military missions as well.

Anecdotal reports from individuals who have served in peacemaking and peacekeeping operations suggest that a wide range of environmental stressors are often present. For instance, participants of the mission in Somalia were exposed to several noncombat-related stressors ranging from an adverse climate and contaminated food and water, to being confronted with armed locals who were not considered the "enemy," but who nonetheless posed a threat to their lives (Grinfeld, 1993). Soldiers who served in Haiti expressed distress over the quality of living conditions and the poverty with which they were confronted (Wilkinson, 1994).

Preliminary accounts also imply a wide range of subjective emotional responses among individuals who take part in these new types of military operations. Participants are often required to maintain the difficult balance of power with restraint in situations that could range in political climate from mildly confusing and disorganized to seriously and dangerously chaotic (Henshaw, 1993). Thus, peacekeepers may feel overwhelmed with the bore-

dom, isolation, and cultural deprivation that often accompany the "observer" as compared to "intervener" role of their duties (Harris, Rothberg, Segal, & Segal, 1993), or they may become frustrated with the relatively inactive role they play in the peace process (Mortensen, 1990). Military personnel may also become disillusioned with their duties, since their role in the mission will not always result in an objectively defined success. Although the problems defined by the mission may be amenable to some degree of change, in many cases they may not always be resolvable (Henshaw, 1993).

Thus, multidimensional exposure scales may need to be tailored on a case-by-case basis to capture the full range of events included in each new military mission. In this next section, we will delineate the steps one can take to develop a clinically sensitive measure of exposure that can be used in this rapidly changing military environment. As issues of psychometric development are covered in another chapter in this book (Weathers, Keane, King, & King, Chapter 4, this volume), here we will focus solely on the generation of items that will effectively tap the construct of exposure.

Suggestions for the Development of Military-Related Exposure Scales

The first step an assessor must take in developing a measure of exposure is initial item selection (content validity). Items for a test are most often generated and chosen on the basis of their face validity in relation to a theoretical understanding of the concept to be measured (Nunally, 1973). This pool of initial items can be developed in several ways. If one does not have direct contact with participants in the mission, there are at least two alternative methods of obtaining content information. One approach is to survey a panel of experts in the field of military-related PTSD who can use their clinical expertise in the determination of appropriate items for an exposure scale. Another option is to gather descriptive information presented in media accounts of anecdotal reports by participants on the mission. Although these approaches can result in the development of face-valid items, the best manner in which to collect content information is to directly sample participants.

Information for item development can be directly collected from participants in many ways. One approach is to construct a scale based on the techniques described earlier, and then to derive feedback regarding the items from individuals who have served, or who are currently serving, in the mission. Another method involves incorporating descriptive data obtained through clinical interviewing or critical-incident debriefing into the development of items. Although both these approaches can be easily implemented, a potentially more effective and rigorous technique that can be used to collect this type of qualitative data for item generation is the use of focus group interviewing.

Focus group interviewing is a technique by which information about a novel content area can be quickly and inexpensively obtained by observ-

company the "observ-
arris, Rothberg, Segal,
the relatively inactive
)). Military personnel
: their role in the mis-
success. Although the
ome degree of change,
enshaw, 1993).
ed to be tailored on a
included in each new
ate the steps one can
sure that can be used
es of psychometric de-
ok (Weathers, Keane,
us solely on the gener-
of exposure.

measure of exposure
t are most often gener-
lation to a theoretical
ly, 1973). This pool of
does not have direct
least two alternative
ich is to survey a panel
can use their clinical
or an exposure scale.
resented in media ac-
ssion. Although these
d items, the best man-
y sample participants.
ly collected from par-
t a scale based on the
ck regarding the items
ly serving, in the mis-
iptive data obtained
efing into the develop-
e easily implemented,
at can be used to col-
he use of focus group

ch information about
y obtained by observ-

ing how participants interact with one another regarding a topic provided by the leader (Morgan, 1988). To use this methodology, an interested researcher would construct a focus group of participants who have been deployed to serve in the mission. Through directed group discussions about the nature of the duty, the unique stressors and conflicts that participants face should become readily apparent and can be incorporated into a measure of exposure.

The selection of focus group members will inevitably vary regarding the purpose of the assessment but should typically include and consider the experiences of a wide variety of participants. For instance, different gender or ethnic groups may encounter very different stressors in the military, so it may be important to create groups that accurately reflect the demographics of the sample of interest. In addition, including participants of various branches and ranks of the military in a group, or running subgroups of special individuals (e.g., a "front line" Marine focus group) may be fruitful. For instance, it has been theorized that members of elite combat units who are self-selected and subsequently trained and socialized in traditional combat activities may have a more difficult adjustment to the types of duties required in peacemaking (Segal & Segal, 1993). Finally, sampling groups widely across the time period of the mission will help to elicit data regarding the changing nature of the exposure variables.

In addition to content, another issue that needs to be addressed regarding item development is the format of the questions comprising the scale (Golden et al., 1984). Items can either be open-ended, allowing respondents to freely answer a question, including any information they feel is relevant and pertinent, or restricted, such as a forced choice (true–false) or multiple-choice item. Open-ended questions allow more personalized responses and may be helpful in providing detailed information about experiences in the war zone. However, these items are difficult to quantify and score. On the other hand, restricted items, although more standardized, are easier to interpret in a group or normative context. An assessment approach that includes both types of items and thus combines nomothetic and ideographic methodologies may be the most flexible in allowing clinicians to better understand exposure experiences.

Several surveys developed at the National Center for PTSD at the Boston VA Medical Center have successfully incorporated many of these methodological nuances to instrument development. For instance, Wolfe, Brown, and Kelley (1993b) designed a survey to investigate the multidimensional components of exposure among individuals who served in the Gulf War. Items were generated both from previously validated exposure measures and feedback from Operation Desert Storm (ODS) veterans, and the item format allowed for both fixed and open-ended responses. Litz and his colleagues (Litz, Moscowitz, Friedman, & Ehlich, 1995) designed a survey to evaluate the unique, long-term psychosocial sequelae that stem from participation in the peacemaking and peacekeeping mission in Somalia during Operation Re-

store Hope (ORH; later Operation Continue Hope, OCH). Items were generated based on anecdotal descriptions of events experienced by military personnel who were deployed to Somalia and qualitative information about the nature of the mission derived from debriefing groups. This survey also incorporated some open-ended questions to allow participants to report unique aspects of the stressors they faced. These efforts serve as models for the future development of psychometrically valid measures of exposure. In addition, both the Mississippi Scale and the Combat Exposure Scale were initially developed using this systematic approach.

Cultural Considerations in the Assessment of Military-Related PTSD

Another challenge to the assessment of military-related PTSD is the need to develop instruments that are culturally sensitive. Concurrent with changes in the function of the military, the demographic composition of the U.S. armed forces has also dramatically shifted. Over the last 20 years, the proportion of women in the armed forces has grown from less than 2% to more than 11%, and the percentage of African Americans serving has doubled from 10% to 20% (Binkin, 1993). This change in the demographics of the armed forces necessitates that cultural considerations be taken into account in the assessment of war-zone-related PTSD. Additionally, our sensitivity to cultural issues has increased, resulting in a growing emphasis on this important component of assessment (Keane, Kaloupek, & Weathers, 1996).

There are several clinical descriptions of ethnocultural-specific responses to traumatic events that underscore the importance of culturally sensitive instrumentation. Racial conflicts, discrimination, bicultural struggles, and identification with the "enemy" have all been cited as unique obstacles to readjustment commonly experienced by minority veterans (Kraft, 1993; Loo, 1994; Parson, 1985). In fact, differences in the level of exposure to war-zone-related stressors and the severity of PTSD symptoms experienced between ethnic minority and Caucasian veterans have been empirically documented (e.g., Green, Grace, Lindy, & Leonard, 1990b; Kulka et al., 1990). Unfortunately, it is very difficult to meaningfully interpret these group differences. Much of the research in this area is limited by the use of assessment instruments that are not culturally sensitive, and by the vast diversity among the cultural groups of interest (Marsella, Friedman, & Spain, 1993).

Guidelines to Ethnocultural Assessment

In an effort to improve the research on ethnocultural aspects of psychopathology, several writers have compiled guidelines for culturally sensitive assessment. First, an assessor should be clinically sensitive to ethnic issues and aware of his or her own prejudices and biases (Penk & Allen, 1991; Westermeyer, 1985). Second, researchers must go beyond comparing categories of

ethnic groups as the sole means of understanding ethnocultural variability (Marsella et al., 1993; Penk & Allen, 1991). Moreover, the level of individuals' acculturation to the dominant culture must be assessed rather than assumed by their ethnic identity. Finally, it is key that instrumentation be developed that maintains equivalence across several different cultural groups.

Dimensions of Cultural Equivalence

Cultural equivalence in assessment is typically established within several different domains: content, semantic, technical, normative, and conceptual equivalence (Flaherty et al., 1988; Lonner, 1985; Marsella & Kameoka, 1988). First, it is important to ensure that the content being measured is relevant to the phenomena of each culture being studied. Second, semantic equivalence should be obtained ensuring, through translation and back-translation by bilingual experts, that the meaning of each item is the same in each culture. Measures are determined to be technically equivalent when the method of assessment (e.g., self-report, interview) results in comparable comfort and familiarity between cultures. For instance, it is important to note in developing a culturally sensitive assessment instrument that the variation in a Likert-type scale is meaningless to some ethnic groups (Flaskerud, 1988; Kinzie et al., 1982). Normative equivalence refers to the importance of using local norms to interpret findings. In many cases, because of cultural differences in definitions of problematic behavior, it may be inappropriate to use the criterion for caseness developed in one culture to determine the boundaries of pathology in another. Finally, it is crucial that conceptual equivalence be determined. This ensures that the instrument is measuring the same theoretical construct, such as shame or dependency, in each culture. Keane et al. (1996) provide a more thorough description of the process necessary for developing instruments necessary to appropriately and equivalently assess trauma across cultural and ethnic groups.

SUMMARY

Assessing traumatic life experiences and PTSD that occurs as a function of military service is conceptually and practically challenging. Military service varies from one action to the next, and in this post–Cold War era, clinicians and researchers will need to modify and alter their approaches to assessment in accordance with the particular details of the military activities involved. Moreover, the demographic composition of the forces is continuing to vary, and instruments need to be developed that are sensitive to the cultural nuances of the subcultures within our population. Efforts to ensure that minority populations are represented in all phases of instrument development are important to the ultimate utility of the assessment instruments, whether they be primarily for use in the clinic, or in field or labora-

tory research studies. Reliability and validity data for instruments are most informative if available on most, if not all, minority populations on which the instruments will be used.

Today there are many instruments available to assess war-zone stress exposure and military-related PTSD. These instruments have demonstrated utility in the clinic and in the laboratory. They are responsible for the great expansion of our knowledge since 1980 on the psychological, social, and physical effects of traumatic events. Our ability to appropriately assess both trauma exposure and PTSD has led to widespread recognition and acceptance of the central role that these phenomena play in the lives of individuals in society. Future research on trauma exposure and PTSD as it occurs following military actions will continue to figure prominently in the development of a humane and sensible public policy toward individuals who serve in the military. The development of assessment instruments and methods that are reliable and valid will assist immensely in that process.

REFERENCES

American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders.* Washington, DC: Author.

American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed., rev.). Washington, DC: Author.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Binkin, M. (1993). *Who will fight the next war? The changing face of the American military.* Washington, DC: Brookings Institute.

Blake, D. D., Weathers, F. W., Nagy, L. N., Kaloupek, D. G., Klauminser, G., Charney, D. S., & Keane, T. M. (1990). A clinician rating scale for assessing current and lifetime PTSD: The CAPS-1. *Behavior Therapist, 18,* 187–188.

Blanchard, E. B., Gerardi, R. J., Kolb, L. C., & Barlow, D. H. (1986). The utility of the anxiety disorders interview schedule in the diagnosis of post-traumatic stress disorder (PTSD) in Vietnam veterans. *Behavior Research Therapy, 24,* 577–580.

Blanchard, E. B., Kolb, L. C., Pallmeyer, T. P., & Gerardi, R. (1982). A psychophysiological study of post traumatic stress disorder in Vietnam veterans. *Psychiatric Quarterly, 34,* 220–229.

Davidson, J. R. T., Smith, R. D., & Kudler, H. S. (1989). Validity and reliability of the DSM III criteria for posttraumatic stress disorder: Experience with a structured interview. *Journal of Nervous and Mental Disease, 177,* 336–341.

Derogatis, L. R. (1977). *The SCL-90 manual: 1. Scoring, administration and procedures for the SCL-90.* Baltimore: Johns Hopkins University School of Medicine, Clinical Psychometrics Unit.

DiNardo, P.A., & Barlow, D. H. (1988). *Anxiety Disorders Interview Scale—Revised.* Albany, NY: Center for Phobia and Anxiety Disorders.

Egendorf, A., Kadushin, C., Laufer, R. S., Rothbart, G., & Sloan, L. (1981). *Legacies of Vietnam: Comparative adjustment of veterans and their peers* (Vol. 3). New York: Center for Policy Research.

Eyre, D. P., Segal, D. R., & Segal, M. W. (1993). The social construction of peacekeeping. In D. R. Segal & M. W. Segal (Eds.), *Peacekeepers and their wives: American participation in the multinational force and observers* (pp. 42–55). Westport, CT: Greenwood Press.

Falsetti, S. A., Resnick, H. S., Kilpatrick, D. G., & Freedy, J. R. (1994). A review of the Potential Stressful Events Interview: A comprehensive assessment instrument of high and low magnitude stressors. *Behavior Therapist, 17,* 66–67.

Figley, C. R., & Stretch, R. H. (1980). Vietnam Veterans Questionnaire Combat Exposure Scale. In *Vietnam Veterans Questionnaire: Instrument development. Final Report.* West Lafayette, IN: Purdue University.

Flaherty, J. A., Gaviria, F. M., Pathak, D., Mitchell, T., Wintrob, R., Richman, J. A., & Birz, S. (1988). Developing instruments for cross-cultural psychiatric research. *Journal of Nervous and Mental Disease, 176,* 257–263.

Flaskerud, J. H. (1988). Is the Likert scale format culturally biased? *Nursing Research, 37,* 185–186.

Fontana, A., & Rosenheck, R. (1994). A short form of the Mississippi Scale for measuring change in combat related PTSD. *Journal of Traumatic Stress, 7,* 407–414.

Foy, D., Sipprelle, R. C., Rueger, D. B., & Carroll, E. (1984). Etiology of posttraumatic stress disorder in Vietnam veterans: Analysis of premilitary, military and combat exposure influences. *Journal of Consulting and Clinical Psychology, 52,* 79–87.

Friedman, M. J., Schneiderman, C. K., West, A. N., & Corson, J. A. (1986). Measurement of combat exposure, posttraumatic stress disorder, and life among Vietnam combat veterans. *American Journal of Psychiatry, 143,* 537–539.

Gallops, M., Laufer, R. S., & Yager, T. (1981). Revised combat scale. In R. S. Laufer & T. Yager (Eds.), *Legacies of Vietnam: Comparative adjustments of veterans and their peers* (Vol. 3, pp. 125–129). Washington, DC: U.S. Government Printing Office.

Gillespie, R. D. (1942) *Psychological effects of war on citizen and soldier.* New York: Norton.

Golden, C. J., Sawicki, R. S., & Franzen, M. D. (1984). Test construction. In G. Goldstein & M. Hersen (Eds.), *Handbook of psychological assessment* (pp. 19–37). New York: Pergamon Press.

Grady, D. A., Woolfolk, R. L., & Budney, A. J. (1989). Dimensions of war-zone stress: An empirical analysis. *Journal of Nervous and Mental Disease, 177,* 347–350.

Graham, J. R. (1993). *MMPI-2: Assessing personality and psychopathology.* New York: Oxford University Press.

Green, B. L. (1993). Identifying survivors at risk: Trauma and stressors across events. In J. P. Wilson & B. Raphael (Eds.), *International handbook of traumatic stress syndromes* (pp. 135–144). New York: Plenum Press.

Green, B. L., Grace, M. C., Lindy, J. D., & Gleser, G. G. (1990a). War stressors and symptom persistence in posttraumatic stress disorder. *Journal of Anxiety Disorders, 4,* 31–39.

Green, B. L., Grace, M. C., Lindy, J. D., & Leonard, A. C. (1990b). Race differences in response to combat stress. *Journal of Traumatic Stress, 3,* 379–393.

Grinfeld, M. J. (1993, February). U.S. troops to the rescue again: Soldiers' mental health now a serious priority for military leadership. *Psychiatric Times,* pp. 1, 6.

Grinker, R., & Spiegel, J. P. (1945). *Men under stress.* Philadelphia: Blakison.

Hammarberg, M. (1992). Penn Inventory for posttraumatic stress disorders: Psychometric properties. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 4,* 67–76.

Harris, J. J., Rothberg, J. M., Segal, D. R., & Segal, M. W. (1993). Paratroopers in the

desert. In D. R. Segal & M. W. Segal (Eds.), *Peacekeepers and their wives: American participation in the multinational force and observers* (pp. 81–94). Westport, CT: Greenwood Press.

Hendrix, C. C., & Schumm, W. (1990). Reliability and validity of the Abusive Violence Scale. *Psychological Reports, 66,* 1251–1258.

Hendrix, C. C., Anelli, L. M., Gibbs, J. P., & Fournier, D. G. (1994). Validation of the Purdue Post-Traumatic Stress Scale on a sample of Vietnam veterans. *Journal of Traumatic Stress, 7,* 311–318.

Henshaw, J. H. (1993). Forces for peacekeeping, peace enforcement and humanitarian missions. In B. M. Blechman, W. J. Durch, D. R. Graham, J. H. Henshaw, P. L. Reed, V. A. Utgoff, & S. A. Wolfe (Eds.), *The American military in the twenty-first century* (pp. 397–430). New York: St. Martin's Press.

Herman, D. S., Weathers, F. W., Litz, B. T., & Keane, T. M. (in press). Keane PTSD scale of the MMPI-2: Reliability and validity of the embedded and stand-alone versions. *Assessment.*

Herman, J. L. (1993). Sequelae of prolonged and repeated trauma: Evidence for a complex posttraumatic stress disorder (DESNOS). In J. R. T. Davidson & E. B. Foa (Eds.), *Posttraumatic stress disorder: DSM-IV and beyond* (pp. 213–228). Washington, DC: American Psychiatric Press.

Horowitz, M. J., Wilner, N. R., & Alvarez, W. (1979). Impact of Event Scale: A measure of subjective distress. *Psychosomatic Medicine, 41,* 208–218.

Hovens, J. E., Falger, P. R. J., Op den Velde, W., Mweijer, P., de Grown, J. H. M., & van Duijn, H. (1993). A self-rating scale for the assessment of posttraumatic stress disorder in Dutch Resistance veterans of World War II. *Journal of Clinical Psychology, 49,* 196–203.

Hovens, J. E., van der Ploeg, H. M., Bramsen, I., Klaarenbeek, M. T. A., Schreuder, J. N., Rivero, V. V. (1994). The development of the Self-Rating Inventory for Posttraumatic Stress Disorder. *Acta Psychiatrica Scandinavica, 90,* 172–183.

Hyer, L., Davis, H., Boudewyns, P., & Woods, M. G. (1991). A short form of the Mississippi Scale for Combat-Related PTSD. *Journal of Clinical Psychology, 4,* 510–518.

Janes, G. R., Goldberg, J., Eisen, S. A., & True, W. R. (1991). Reliability and validity of a combat exposure index for Vietnam Era Veterans. *Journal of Clinical Psychology, 47,* 80–86.

Kardiner, A. (1941). *The traumatic neurosis of war.* New York: Paul B. Hoeber.

Keane, T. M., Caddell, J. M., & Taylor, K. L. (1988). Mississippi Scale for Combat-Related Posttraumatic Stress Disorder: Three studies in reliability and validity. *Journal of Consulting and Clinical Psychology, 56,* 85–90.

Keane, T. M., Fairbank, J. A., Caddell, J. M., Zimering, R. T., & Bender, M. (1985). A behavioral approach to assessing and treating PTSD in Vietnam veterans. In C. R. Figley (Ed.), *Trauma and its wake* (pp. 257–294). New York: Brunner/Mazel.

Keane, T. M., Fairbank, J. A., Caddell, J. M., Zimering, R. T., Taylor, K. L., & Mora, C.A. (1989). Clinical evaluation of a measure to assess combat exposure. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 1,* 53–55.

Keane, T. M., Kaloupek, D. G., & Weathers, F. W. (1996). Cross-cultural issues in the assessment of post-traumatic stress disorder. In A. J. Marsella, M. J. Friedman, E. Gerrity, & R. Scurfield (Eds.), *Ethnocultural aspects of post-traumatic stress disorder* (pp. 183–205). Washington DC: American Psychiatric Press.

Keane, T. M., Malloy, P. F., & Fairbank, J. A. (1984). Empirical development of an MMPI subscale for the assessment of combat-related posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology, 52,* 888–891.

Keane, T. M., & Pe
[Letter to the
Keane, T. M., Wolf
dence for diag
of Clinical Psych
King, D. W., King,
representation
order in male
184–196.
King, L. A., King, D
Checklist: A se
1–17.
Kinzie, J. D., Manso
Development a
American Journa
Kraft, S. (1993, Janu
1, 13.
Krinsley, K., Weath
ling, R. (1994).
lished measur
Kulka, R. A., Schle
C. R., & Weiss,
community: Pr
chological Asses
Kulka, R. A., Schle
C. R., & Weiss,
ings from the Na
Laufer, R. S., Gallo
Vietnam veter
Litz, B. T., Moscow
vey. Unpublish
Litz, B. T., Penk, W
man, D. (1991)
sonality Inver
post-traumatic
Lonner, W. J. (198
Counseling Psyc
Loo, C. M. (1994).
of Traumatic S
Lund, M., Foy, D.,
A systematic a
ogy, 6, 1323–1
Lyons, J. A., & Kea
Journal of Trau
Lyons, J. A., & Sco
the Keane Pos
Marsella, A. J., Fric
traumatic stre
of psychiatry (V
Marsella, A. J., & K

Keane, T. M., & Penk, W. (1988). The prevalence of post-traumatic stress disorder [Letter to the editor]. *New England Journal of Medicine, 318,* 1690–1691.

Keane, T. M., Wolfe, J., & Taylor, K. L. (1987). Post-traumatic stress disorder: Evidence for diagnostic validity and methods of psychological assessment. *Journal of Clinical Psychology, 43,* 32–43.

King, D. W., King, L. A., Gudanowski, D. M., & Vreven, D. L. (1995a). Alternative representation of war zone stressors: Relationships to posttraumatic stress disorder in male and female Vietnam veterans. *Journal of Abnormal Psychology, 104,* 184–196.

King, L. A., King, D. W., Leskin, G., & Foy, D. W. (1995b). The Los Angeles Symptom Checklist: A self-report measure of posttraumatic stress disorder. *Assessment, 2,* 1–17.

Kinzie, J. D., Manson, S. M., Vinh, D. T., Tolan, N. T., Anh, B., & Pho, T. N. (1982). Development and validation of a Vietnamese-language depression rating scale. *American Journal of Psychiatry, 138,* 1276–1281.

Kraft, S. (1993, January 30). Black like me: Troops in Somalia. *Los Angeles Times,* pp. 1, 13.

Krinsley, K., Weathers, F., Vielhauer, M., Newman, E., Walker, E., Young, L., & Kimerling, R. (1994). *Evaluation of Lifetime Stressors Questionnaire and Interview.* Unpublished measure.

Kulka, R. A., Schlenger, W. E., Fairbank, J. A., Jordan, B. K., Hough, R. L., Marmar, C. R., & Weiss, D. S. (1991). Assessment of posttraumatic stress disorder in the community: Prospects and pitfalls from recent studies of Vietnam veterans. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 3,* 547–560.

Kulka, R. A., Schlenger, W. E., Fairbank, J. A., Jordan, B. K., & Hough, R. L., Marmar, C. R., & Weiss, D. S. (1990). *Trauma and the Vietnam War generation: Report of findings from the National Vietnam Veterans Readjustment Study.* New York: Brunner/Mazel.

Laufer, R. S., Gallops, M. S., & Frey-Wouters, E. (1984). War stress and trauma: The Vietnam veteran experience. *Journal of Health and Social Behavior, 25,* 65–85.

Litz, B. T., Moscowitz, A., Friedman, M., & Ehlich, P. (1995). *Somalia Peacekeeping Survey.* Unpublished manuscript.

Litz, B. T., Penk, W., Walsh, S., Hyer, L., Blake, D. D., Marx, B., Keane, T. M., & Bitman, D. (1991). Similarities and differences between Minnesota Multiphasic Personality Inventory (MMPI) and MMPI-2 applications to the assessment of post-traumatic stress disorder. *Journal of Personality Assessment, 57,* 238–254.

Lonner, W. J. (1985). Issues in testing and assessment in cross-cultural counseling. *Counseling Psychologist, 13,* 599–614.

Loo, C. M. (1994). Race-related PTSD: The Asian American Vietnam veteran. *Journal of Traumatic Stress, 7,* 637–656.

Lund, M., Foy, D., Sipprelle, C., & Strachan, A. (1984). The Combat Exposure Scale: A systematic assessment of trauma in the Vietnam War. *Journal of Clinical Psychology, 6,* 1323–1328.

Lyons, J. A., & Keane, T. M. (1992). Keane PTSD scale: MMPI and MMPI-2 update. *Journal of Traumatic Stress, 5,* 111–117.

Lyons, J. A., & Scotti, J. R. (1994). Comparability of two administration formats of the Keane Posttraumatic Stress Disorder Scale. *Psychological Assessment, 6,* 209–211.

Marsella, A. J., Friedman, M. J., & Spain, E. H. (1993). Ethnocultural aspects of posttraumatic stress disorder. In J. M. Oldham, M. B. Riba, & A. Tasman (Eds.), *Review of psychiatry* (Vol. 12, pp. 157–181). Washington, DC: American Psychiatric Press.

Marsella, A. J., & Kameoka, V. A. (1988). Ethnocultural issues in the assessment of

psychopathology. In S. Wetzler (Ed.), *Measuring mental illness: Psychometric assessment for clinicians* (pp. 231–256). Washington, DC: American Psychiatric Press.

McFall, M. E., Smith, D. E., Mackay, P. W., & Tarver, D. J. (1990a). Reliability and validity of Mississippi Scale for Combat-Related Posttraumatic Stress Disorder. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 2,* 114–121.

McFall, M. E., Smith, D. E., Roszell, D. K., Tarver, D. J., & Malais, K. L. (1990b). Convergent validity of measures of PTSD in Vietnam combat veterans. *American Journal of Psychiatry, 147,* 645–648.

Michaelson, M. (1993). Somalia: The painful road to reconciliation. *Africa Today, 12,* 53–73.

Morgan, D. L. (1988). Focus groups as qualitative research. *Sage University paper series on qualitative research methods* (Vol. 16). Beverly Hills, CA: Sage.

Mortensen, M. S. (1990, August). *The UN peacekeeper: A New Type of Soldier? Preliminary studies of professional roles in military forces.* Paper presented to the American Sociological Association Convention, Washington, DC.

Moskos, C. M., & Burk, J. (1994). The postmodern military. In J. Burk (Ed.), *The military in new times: Adapting armed forces to a turbulent world* (pp. 141–162). Boulder, CO: Westview Press.

Nunally, J. (1973). *Psychometric theory.* New York: McGraw-Hill.

Orr, S., Claiborn, J. M., Altman, B., Forgue, D. F., de Jong, J. B., Pitman, R. K., & Herz, L. R. (1990). Psychometric profile of PTSD, anxious and healthy Vietnam veterans: Correlations with psychophysiological responses. *Journal of Consulting and Clinical Psychology, 58,* 329–335.

Orsillo, S. M., Litz, B. T., Goebel, A. E., Friedman, M., Ehlich, P., & Bergman, E. D. (1994a, November). *An investigation of the psychological sequelae associated with peacemaking in Somalia.* Paper presented at the annual meeting of the Association for Advancement of Behavior Therapy, San Diego, CA.

Orsillo, S. M., Litz, B. T., Goebel, A. E., Friedman, M., Ehlich, P., & Bergman, E. D. (1994b, November). *Changes over time in the peacemaking mission in Somalia.* Paper presented at the annual meeting of the International Society for Traumatic Stress Studies, Chicago, IL.

Parson, E. R. (1985). The intercultural setting: Encountering black Viet Nam. In S. M. Sonnenberg, A. S. Blank, & J. A. Talbott (Eds.), *The trauma of war: Stress and recovery in Viet Nam veterans* (pp. 359–388). Washington, DC: American Psychiatric Press.

Penk, W. E., & Allen, I. M. (1991). Clinical assessment of post-traumatic stress disorder (PTSD) among American minorities who served in Vietnam. *Journal of Traumatic Stress, 4,* 41–66.

Perconte, S., Wilson, A., Pontius, E., Dietrick, A., Kirsch, C., & Sparacino, C. (1993). Unit-based intervention for Gulf War soldiers surviving a SCUD missile attack: Program description and preliminary findings. *Journal of Traumatic Stress, 6,* 225–238.

Pitman, R. K., Orr, S. P., Forgue, D. F., de Jong, J. B., & Claiborn, J. M. (1987). Psychophysiologic assessment of posttraumatic stress disorder imagery in Vietnam combat veterans. *Archives of General Psychiatry, 44,* 970–975.

Prins, A., Kaloupek, D., & Keane, T. M. (1995). Psychophysiological evidence for autonomic arousal and startle in traumatized adult populations. In M. J. Friedman, D. Charney, & A. Deutch (Eds.), *Neurobiological and clinical consequences of stress: From normal adaptation to PTSD.* New York: Raven Press.

Query, W. T., Megran, J., & McDonald, G. (1986). Applying posttraumatic stress dis-

order MMPI subscale to World War II POW veterans. *Journal of Clinical Psychology, 42,* 315–317.

Robins, L. N., Helzer, J. E., Croughan, J. L., & Ratcliff, K. S. (1981a). National Institute of Mental Health Diagnostic Interview Schedule: Its history, characteristics, and validity. *Archives of General Psychiatry, 38,* 381–389.

Robins, L. N., Helzer, J. E., Croughan, J. L., Williams, J. B. W., & Spitzer, R. L. (1981b). *NIMH Diagnostic Interview Schedule, Version III* (Publication No. ADM-T-42-3 [5-81,8-81]). Rockville, MD: NIMH, Public Health Service.

Schlenger, W. E., Kulka, R. A., Fairbank, J. A., Hough, R. L., Jordan, B. K., Marmar, C. R., & Weiss, D. S. (1992). The prevalence of post-traumatic stress disorder in the Vietnam generation: A multimodal, multisource assessment of psychiatric disorder. *Journal of Traumatic Stress, 5,* 333–363.

Schwarzwald, J., Solomon, Z., Weisenberg, M., & Mikulincer, M. (1987). Validation of the Impact of Event Scale for psychological sequelae of combat. *Journal of Consulting and Clinical Psychology, 55,* 251–256.

Segal, D. R., & Segal, M. W. (1993). Research on soldiers of the Sinai Multinational Force and Observers. In D. R. Segal & M. W. Segal (Eds.), *Peacekeepers and their wives: American participation in the multinational force and observers* (pp. 56–64). Westport, CT: Greenwood Press.

Shalev, A. Y., Orr, S. P., & Pitman, R. K. (1992). Psychophysiologic responses during script-driven imagery as an outcome measure in posttraumatic stress disorder. *Journal of Clinical Psychiatry, 532,* 324–326.

Shalev, A. Y., Orr, S. P., & Pitman, R. K. (1993). Psychophysiologic assessment of traumatic imagery in Israeli civilian patients with posttraumatic stress disorder. *American Journal of Psychiatry, 150,* 620–624.

Solomon, Z. (1993). *Combat stress reaction: The enduring toll of war.* New York: Plenum Press.

Solomon, Z., Mikulincer, M., & Hobfoll, S. E. (1987). Objective versus subjective measurement of stress and social support: Combat-related reactions. *Journal of Consulting and Clinical Psychology, 55,* 577–583.

Solomon, Z., Benbenishty, R., Neria, Y., Abramowitz, M., Ginzburg, K., & Ohry, A. (1993). Assessment of PTSD: Validation of the revised PTSD Inventory. *Israel Journal of Psychiatry and Related Sciences, 30,* 110–115.

Spitzer, R. L., Williams, J. B., Gibbon, M., & First, M. B. (1990). *Structured Clinical Interview for DSM-III-R—Patient edition (SCID-P).* New York: Biometrics Research Department, New York State Psychiatric Institute.

Sutker, P. B., Uddo, M., Brailey, K., Vasterling, J. J., & Errera, P. (1994). Psychopathology in war-zone deployed and nondeployed Operation Desert Storm troops assigned graves registration duties. *Journal of Abnormal Psychology, 103,* 383–390.

Watson, C. G. (1990). Psychometric posttraumatic stress disorder techniques: A review. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 2,* 460–469.

Watson, C. G., Juba, M. P., & Anderson, P. E. D. (1989). Validities of five combat scales. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 1,* 98–102.

Watson, C. G., Juba, M. P., Manifold, V., Kucala, T., & Anderson, P. E. D. (1991). The PTSD Interview: Rationale, descriptions, reliability, and concurrent validity of a DSM-III based technique. *Journal of Clinical Psychology, 47,* 179–188.

Watson, C. G., Kucala, T., & Manifold, V., Vassar, P., & Juba, M. (1988). Differences between post-traumatic stress disorder patients with delayed and undelayed onsets. *Journal of Nervous and Mental Disease, 176,* 568–572.

Weathers, F. W., & Litz, B. T. (1994). Psychometric properties of the Clinician-Administered PTSD Scale, CAPS-1. *PTSD Research Quarterly, 5,* 2–6.

Weathers, F. W., Litz, B. T., Herman, D. S., Huska, J. A., & Keane, T. M. (1993, October). *The PTSD Checklist: Reliability, validity, and diagnostic Utility.* Paper presented at the annual meeting of the International Society for Traumatic Stress Studies, San Antonio, TX.

Weathers, F. W., Litz, B. T., Keane, T. M., Herman, D. S., Steinberg, H. R., Huska, J. A., & Kraemer, H. C. (1996). The Utility of the SCL-90-R for the diagnosis of war-zone related post-traumatic stress disorder. *Journal of Traumatic Stress, 9,* 111–128.

Westermeyer, J. (1985). Psychiatric diagnosis across cultural boundaries. *American Journal of Psychiatry, 142,* 798–805.

Wilkinson, T. (1994, October, 21). GI suicides in Haiti alert army to the enemy within. *Los Angeles Times,* pp. 1, 8, 9.

Wilson, J. P. (1979). *The forgotten warrior project.* Cincinnati, OH: Disabled American Veterans.

Wilson, J. P., & Krause, G. E. (1980). *The Vietnam era stress inventory.* Cleveland, OH: Cleveland State University.

Wilson, J. P., & Krause, G. E. (1989). Vietnam Era Stress Inventory. In J. P. Wilson (Ed.), *Trauma transformation and healing* (pp. 265–308). New York: Brunner/Mazel.

Wilson, J. P., & Prabucki, K. (1989). Stress sensitivity and psychopathology. In J. P. Wilson (Ed.), *Trauma transformation and healing* (pp. 75–110). New York: Brunner/Mazel.

Wolfe, J., Brown, P. J., Furey, J., & Levin, K. B. (1993a). Development of a War-Time Stressor Scale for women. *Psychological Assessment, 5,* 330–335.

Wolfe, J., Brown, P. J., & Kelley, J. M. (1993b). Reassessing war stress: Exposure and the Persian Gulf War. *Journal of Social Issues, 49,* 15–31.

Wolfe, J., Keane, T. M., Kaloupek, D. G., Mora, C. A., & Wine, P. (1993c). Patterns of positive readjustment in Vietnam combat veterans. *Journal of Traumatic Stress, 6,* 179–193.

Yehuda, R., Southwick, S. M., & Giller, E. L. (1992). Exposure to atrocities and severity of chronic posttraumatic stress disorder in Vietnam combat veterans. *American Journal of Psychiatry, 149,* 333–336.

Zilberg, N. J., Weiss, D. S., & Horowitz, M. J. (1982). Impact of Event Scale: A cross-validation study and some empirical evidence supporting a conceptual model of stress responses syndromes. *Journal of Consulting and Clinical Psychology, 50,* 407–414.

CHAP

Asse
Expe

KATHLEE

INTRODU

Prior to 1
accomplished prima
1949; Bloch, Silber, &
Green, 1983) and/or
reported case obser
tions. Terr's examina
1979, 1981, 1983) an
aster (Eth & Pynoos
children directly re
need for a more sys
tions resulted in the
instruments include
ventory; Birleson, 19
nolds & Richmond,
Ollendick, 1983), "c
in press), and measu
pact of Event Scale;
Chapter 13, this vol
tary school playgro
for an emergency re
ic Stress Reaction In
(Frederick, 1985; Py
struments and subsc
new instruments ar

This chapter ex
Several instruments
ond section of this c
traumatic reactions